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Arno Seeboth

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12/03/2008

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EXAMINER

AHMED, SHEEBA

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

12/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                       |  |
|------------------------------|--------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/568,210 | <b>Applicant(s)</b><br>SEEBOTH ET AL. |  |
|                              | <b>Examiner</b><br>SHEEBA AHMED      | <b>Art Unit</b><br>1794               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8-15, 17-21 and 23-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-15, 17-21 and 23-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |



## DETAILED ACTION

### *Response to Amendment*

1. Amendments to claims 8, 20, 23, 24, and 26 have been entered in the above-identified application. Claims 1-7, 16, and 22 are cancelled. **Claims 8-15, 17-21, and 23-31 are pending and now under consideration.**

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 8-10, 12-15, 17-21, 23-28, 30, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Lucht et al. (US 6,706,218 B2).

Lucht et al. disclose a thermochromic polymer-based temperature indicator composition which comprises a polythiophene and a carrier medium. The structure of the compound is designed such that when the composition is placed in a heat-exchange relationship with an article, the composition will exhibit a color change when a design temperature or a temperature beyond the design temperature is reached in the article. The polythiophene is mixed with a carrier system or liquid medium. Depending upon the specific polythiophene used, the carrier system can be aqueous

Art Unit: 1794

or organic. The polythiophene can be used in the carrier system as a mechanical separation, colloidal solution, or a molecular solution. Also, surfactants, anionic, cationic or non-anionic, can be used if necessary in the carrier system to ensure uniform distribution of the polythiophene in the system. The system is generally applied to the article as a coating on an area of the article, or the entire article, which will be visible during the expected use of the article. The coating can be applied by any technique known in the art, such as by brush, roller, spraying, etc. Accordingly, the coatings typically have a thickness of 0.1 to 1000 microns. The carrier system can also be absorbed on a surface or both absorbed and adsorbed on a surface. In another embodiment, the system is comprised of polythiophenes that visually and reversibly change color at a prescribed temperature in the range of about  $-40$ - $180^{\circ}$  C. and are thermally stable to high temperatures in a range of about  $200$ - $300^{\circ}$  C. The temperature of the color change of the polythiophenes, hereinafter the thermochromic transition, and the high and low temperature colors can be tailored by chemical modification of the polythiophenes. The polythiophenes that can be used as pure compounds or can be incorporated into paints including polyurethanes, polysiloxanes, polyacrylates, and other related polymer-based paints and coatings with about 0.5% polymer based pigment with retention of the thermochromic behavior. The thermochromic polymer-based pigments can be incorporated via injection molding or extrusion into many commercially important plastics such as poly(ethylene terephthalate) (PET), polystyrene, polyethylene (HDPE and LDPE), other polyolefins, polydienes, polycarbonates, polyacrylics, polyacrylic acids, polyacrylamides, polymethacrylics,

Art Unit: 1794

polyvinyl ethers, polyvinyl halides, poly(vinyl nitrile)s poly vinyl esters, polyesters, polysulfones, polysulfonamides, polyamides, polyimines, polyimides, carbohydrates, and polymer mixtures and copolymers. The plastics retain a visually retrievable thermochromic response with pigment loadings of about 0.5% polymer-based pigment (See Abstract, Column 2, lines 9-17; Column 2, lines 35-50; Column 3, lines 13-30; Column 4, lines 13-21). With regards to the process limitation, the Examiner would like to point out that the patentability of a product does not depend on its method of production. If the product is the same as a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 8-15, 17-21, and 23-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakasuji et al. (US 4,028,118 A).

Nakasuji et al. disclose a thermochromic material exhibiting a sharp and reversible metachromatism at temperatures within a range of from -40 to 80 °C can be. The thermochromic characteristics of such a thermochromic material can be further improved when it is occluded in fine microcapsules having a size not exceeding 50 microns. Thermochromic polymers, thermochromic printing inks, thermochromic writing

Art Unit: 1794

instruments, thermochromic paints and thermochromic sheets having excellent thermochromatic characteristics and wide utility can be prepared from such a thermochromic material or microencapsulated thermochromic material. The temperature range shows the color change-initiating temperature to the color change-completion temperature, if Crystal Violet lactone (blue) Rhodamine B lactam (red), 3-diethylamino-6-methyl-7-chlorofluoran (vermilion), 3-diethylamino-5-methyl-7-dibenzylamino fluoran (green), 3,6-bis-methoxy fluoran (yellow) or the like is chosen as the electron donating, chromatic organic compound. When an ordinary dyestuff or pigment is incorporated in the thermochromic material of this invention, it is possible to change color (I) to color (II) reversibly. Further, it is another characteristic feature of the thermochromic material that light can be transmitted or absorbed. In order to improve the properties of the thermochromic material of this invention, it is possible to incorporate an additive in the above three components. As such an additive, there can be mentioned, for instance, an antioxidant, an aging-preventive agent, an ultraviolet absorber, a dissolving assistant, a diluent, a sensitizer and the like. Preferred of such additives used in various embodiments of this invention are benzotriazoles, benzophenones and phenyl salicylates in an amount effective as an ultraviolet absorbent and dilauryl thiodipropionate and distearyl thiodipropionate in an amount effective as an anti-oxidant. The basic thermochromic material and microencapsulated thermochromic material of this invention can be formed into thermochromic polymers, and thermochromic sheets. The basic thermochromic material or microencapsulated thermochromic material can be incorporated homogeneously into a polymer without

Art Unit: 1794

degradation of their inherent excellent properties, whereby there is obtained a thermochromic polymer composition. The polymers used in the present invention to "hold" the thermochromic material for various purposes are in no manner limited with respect to molecular weight, degree of polymerization, melt index or the like. The most preferred for this purposes are the polyolefins, which are substantially completely inert with respect to the thermochromic materials. Of the polyolefins, polyethylene, polypropylene and polyethylene-polypropylene copolymers are most preferred. Further, these thermochromic polymers can be shaped or formed into various thermochromic articles or materials such as blocks, films, filaments, fine particles, rubbery elastomers, liquids and the like. When a thermochromic layer containing the above-described basic thermochromic material or microencapsulated thermochromic material of this invention is laminated on a backing liner, and, if desired, a protective layer is formed on the surface of the thermochromic layer, there can be obtained a thermochromic sheet without degradation of the inherent thermochromic characteristics of the thermochromic material of this invention. The resulting thermochromic sheet can be used as an ordinary household material or an industrial material, either as it is or after it has been further processed. For instance, a basic thermochromic material or microencapsulated thermochromic material of this invention can be so incorporated into a polymer and a film or filament formed from such polymer can be bonded under heat to the backing liner, or such a film or filament can be bonded to the backing liner using an adhesive or binder such as natural resins, synthetic resins, waxes and the like (See Abstract, Column 1, lines 11-18, Column 7, lines 3-7 and 39-43, Column 10, lines



Art Unit: 1794

3-68, all of Column 11, Column 16, lines 16-68, and Column 17, lines 31-40). With regards to the process limitation, the Examiner would like to point out that the patentability of a product does not depend on its method of production. If the product is the same as a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

### ***Response to Arguments***

4. Applicant's arguments filed September 15, 2008 have been fully considered but they are not persuasive. Applicants traverse the rejection of claims 8-10, 12-15, 17-21, 23-28 and 30-31 under 35 U.S.C. § 102(e) as anticipated by Lucht et al. and submit that claim 8 has been amended to recite specific colorants and Lucht et al. only refers to polythiophenes as colorants. However, the Examiner disagrees with the Applicants interpretation of the listed colorants given that polythiophene meets the limitations of an indicator colorant and Lucht specifically teaches that the thermochromic polymer-based pigments can be incorporated via injection molding or extrusion into any other available polymer materials.

Applicants traverse the rejection of claims 8-15, 17-21, and 23-31 8-31 under 35 U.S.C. § 102(b) as anticipated by Nakasuji et al. and state that Nakasuji et al. describes the incorporation of thermochromic materials into the basis polymer via the process of calendering, i.e., the compositions according to Nakasuji are kneaded or welded however, Applicants state that they have found that the process of calendering can not

Art Unit: 1794

result in comparable homogeneous distribution of compounds to be mixed with the polymer as the process of extrusion.

However, Nakasuji et al. disclose that the basic thermochromic material or microencapsulated thermochromic material can be incorporated *homogeneously* into a polymer without degradation of their inherent excellent properties, whereby there is obtained a thermochromic polymer composition and the Examiner has taken the position that the patentability of a product does not depend on its method of production. If the product is the same as a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. Furthermore, the structure implied by the process steps has been considered and it is unclear what distinctive structural characteristics are imparted to the final product. Applicants are reminded that once a product appearing to be identical is found and a 35 U.S.C. 102 rejection has been made, the burden shifts to the Applicants to show an unobvious difference.

Hence, the above rejections are maintained.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1794

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHEEBA AHMED whose telephone number is (571)272-1504. The examiner can normally be reached on Monday-Friday from 8am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sheeba Ahmed/  
Primary Examiner, Art Unit 1794